**QUARTERLY STATUS REPORT**
**NAVAL RESERVE SCIENCE & TECHNOLGY PROGRAM (PROGRAM 38)**

[This report has been modified as follows:
Member names, phone numbers, email addresses have been removed for security reasons
Please contact the Commanding Officer, NRL 510 for additional information]

From: Commanding Officer, NR NRL S&T Det 510 Houston, TX
To: Commanding Officer, Naval research Laboratory, Washington, DC
Via: Director, Naval Reserve Science and Technology Program (Program 38)

Subj: FY-01 FOURTH QUARTER REPORT

Encl: (1) Project Summary Table
(2) Project Reports

1. This forwards the project activities of NR NRL S&T DET 510 Houston, TX during the period from 1 July 2001 to 30 September 2001. Enclosures (1) and (2) contain nineteen project reports. NR NRL S&T DET 510 Houston delivered 220.5 man-days contributory support in FY01, versus 196.5 man-days in FY00, a +12% increase. Highlights for this quarter include:
   a. FNC Autonomous Operations (AO) Reserve Liaison Officer (RLO): LCDR […..] spent 7 days at ONR and the US Naval Academy to discuss the role of the reserves in supporting FNC AO. He identified potential areas for future Program 38 support. While at the Naval Academy, he observed the AUV student competition and spoke to students about careers in ONR and NRL.
   b. Staff METOC Support, Commander U.S. Naval Forces Southern Command: LCDR […..] performed a 57-day ADT in support of COMUSNAVSO Puerto Rico. Specific accomplishments include the delivery of expert actionable recommendations on weather impacts to naval operations in the AOR and an improved updated Destructive Weather Bill.
   c. Stability performance of Tertiary Alkyl Primary Amines (TAPA) in diesel fuel: CAPT […..]performed tests on two TAPA's over a 5-day ADT period. Using the testing methods required by military specifications, it was determined that these additives gave significant stability to a highly unstable fuel.
   d. NRL Code 7600 – Space Sciences Division: LT […..] assisted in the coordination of the FY02 Navy Space Experiments Review Board in preparation for duty as the Navy Liaison to the DoD Space Test Program office at NASA JSC.
   e. NRL Code 6300 – Materials Science and Technology Division: LT […..] prepared slurries of phthalonitrile resin and one weight percent single wall carbon nanotubes. He also characterized nanotube starting material using transmission electron microscopy.
   f. Watchstanding Fatigue Study: LCDR […..] completed a 15-day AT as part of the Navy Research Psychologists on the Watchstanding Fatigue Study. She took the leadership role in performing quantitative analysis of 600 subjects. LCDR […..] added value to the study by documenting the research using digital imagery.
   g. Research Psychologist Web Site: LCDR […..] utilized 40 hours toward maintaining the Navy Research Psychologist Web Site.
   h. USCOMNAVCENT, Bahrain: CDR […..] spent 12 days in support of OPNAV09W's new initiative "TaskForce Web". She provided recommendations to support implementation of a web-based travel briefing system for members traveling within the Middle East AOR. She also coordinated the implementation automation of the web-based command directory.
   i. SUPSHIP, Pascagoula MS: CDR […..] provided 16 hours of consultation and web design support for SUPSHIP's website.

2. If there are any questions or concerns I can be reached at […..].

[Commanding Officer, NRL 510]

Copy to: Commanding Officer, N&MCRC Houston, TX

# NR NRL S&T DET 510 FY-01 4th Quarter Project Summary

| Proj # | Project Name | Member Responsible | Sponsor | Man Days | |
|---|---|---|---|---|---|
| | | | | Quarter | YTD |
| 1 | Synthesis of Nanotube Composites | | NRL Wash c/6320 | 0 | 9.25 |
| 2 | Submariner Fatigue Study | | ONR c/341 | 15 | 15 |
| 3 | Research Psychologist Website | | ONR c/341 | 5 | 12.75 |
| 4 | Chesapeake Bay Outflow Project | | NRL SSC c/7343 | 0 | 5 |
| 5 | Navy Fuels Improvement | | NRL Wash c/6121 | 0 | 20 |
| 6 | Robotics | | NRL SSC c/8231 | 0 | 12 |
| 7 | Autonomous Operations FNC | | ONR c/351 | 7 | 7 |
| 8 | Littoral ASW FNC | | ONR c/321 | 0 | 0 |
| 9 | North Gulf Of Mexico Littoral Initiative | | NAVO c/OTT | 0 | 15 |
| 10 | TEDS to GCCS-M | | NRL MRY c/7542 | 0 | 15.5 |
| 11 | AVHRR Satellite Image Processing | | NRL MRY c/7541 | 0 | 18 |
| 12 | Oceanology 2001 | | ONR c/322 | 0 | 3 |
| 13 | Program 20 Liaison / METOC | | NMOC c/434 | 57 | 58 |
| 14 | Command Planning | | CO NRL | 0 | 5 |
| 15 | Stability performance of TAPA in diesel | | NRL Wash c/6121 | 5 | 5 |
| 16 | USCOMNAVCENT, Bahrain | | USCOMNAVCENT | 12 | 12 |
| 17 | SUPSHIP, Pascagoula MS | | SUPSHIP Pascagoula | 2 | 2 |
| 18 | Space Sciences Division | | NRL Wash c/7600 | 2 | 2 |
| 19 | Materials Science and Technology Div. | | NRL Wash c/6300 | 4 | 4 |
| **Total Man Days FY01** | | | | **109** | **220.5** |
| **Total Man Days FY00** | | | | **44** | **196.5** |

**Enclosure (1)**

# NR NRL S&T DET 510 FY-01 Projects

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**Project Title**: Synthesis and Characterization of an Alumina / Carbon Nanotube Composite by Extrusion
**Focus Area:** NRL Materials Branch c/6320
**Project Summary**: Began preliminary work on Alumina/Nanotube composites including evaluation of binder materials, characterization of carbon fibers, and some extrusion experiments.
**Accomplishments**:
**1st QTR**:
Conducted research (literature search) into various processing routes for an extrudable alumina slurry and selected a few promising techniques. Established contact and began an informal collaboration with ceramists in academia (Rutgers) and industry (Reynolds Metal Co. and Shamrock Technologies) with experience in extrudable ceramic systems. Procured starting materials (alumina, binder, plasticizer, and lubricant) for processing of extrudable alumina. Purified ten grams of Vapor Grown Carbon Fibers (VGCFs) for initial alumina / nanotube composite fiber.
**2nd QTR**:
Characterized Vapor Grown Carbon Fibers (VGCFs) for eventual use in extruded alumina composites using Scanning Electron Microscopy (SEM) and Thermo-Gravimetric Analysis (TGA). Characterized candidate binders using TGA. Evaluated Hydroxypropylmethyl Cellulose (HPMC) and water as an alternative binder system for the composite. Conducted initial extrusion tests on alumina with a polyethylene wax binder. 38 man-hours of work this quarter.
**3rd QTR:**
Nothing to report.
**4th QTR:**
Nothing to report.
**Customer**: Dr. M. A. Imam, NRL Washington c/6320, imam@anvil.nrl.navy.mil, (202) 767-2185.
**Reserve Project Team**: […..]
**Plans for Future Support**: Project will continue as defined in his research proposal.

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**Project Title**: Research Psychologist Web Site
**Focus Area:** ONRHQ - Medical Science & Technology
**Project Summary**: Provides an essential tool for information exchange between active duty research psychologists working on ONR sponsored projects and other DOD funded research. This released an active duty psychologist, who had been maintaining the site, to return to full-time research.
**Accomplishments**:
**1st QTR:**
Requested authorship privileges for the web site. Reviewed current web site and drafted preliminary recommendations for web redesign.
**2nd QTR:**
Spent 24 man-hours as incremental drills on web site maintenance and development this quarter.
**3rd QTR:**
Maintained and updated the Navy Research Psychology Web Site. This Web site greatly improves communication among the research Psychologists in the Navy. Currently in the design process of a new Web site that makes it easier to navigate and includes additional information, increasing the ability to share research information.
**4th QTR:**
Maintained and updated the Navy Research Psychology Web Site.
**Customer**: CDR Stephen Ahlers, ONR Medical S&T c/341, ahlerss@onr.navy.mil, (703) 696-0369.
**Reserve Project Team**: […..]

**Plans for Future Support**: Website support and maintenance will continue as needed.

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**Project Title:** Navy Fuels Improvement
**Focus Area:** NRL Washington c/6121
**Project Summary:** Provided direct lab support for the fuels branch at NRL. Conducted bench tests on additives for fuel system icing inhibitor to solve a shelf life problem, evaluated handheld conductivity meters for use as free water in fuel detectors, and conducted high temperature oxidation tests to evaluate soybean-derived synthetic fuel oil as an military diesel fuel blending agent.
**Accomplishments**:
**1st QTR**:
Completed one week of ASTM D5304 high temperature stability tests on commercial home heating oil samples to which synthetic diesel fuel ("Soy Gold") had been blended at 10% and 20% per volume. Prior to blending the home heating oil had been stressed with water/acid and water/base to represent probable "real world" stress conditions on the fuel. Analyzed the test results, which showed that Soy Gold did in fact significantly improve the shelf life of #2 heating oil when blended 10% by volume. In some cases a tenfold improvement was noted. Soy Gold is worthy of future study as a possible blending agent to convert heating oil into a military grade diesel fuel, such as F-76.

Conducted bench tests on numerous blending agents for Diethylene Glycol Monomethylether, attempting to moderate this fuel system icing inhibitor (FSII)'s extreme hygroscopic behavior. Currently the shelf life of an open container of FSII is less than one day, due to the large amount of water it absorbs from ambient air. This causes the Navy to waste thousands of gallons of additive per year. Analysis of the samples after blending with a number of different additives showed that some of the additives could extend the shelf life of an open container of FSII by a factor of two. Further study is required before modifying the current FSII specifications, however this method shows that improvements in this current Navy problem are possible.
Conducted evaluation tests of hand-held conductivity meters for suitability as free water analyzers for use in the field. Evaluated several different techniques for using a handheld conductivity meter to measure free water in military aviation fuel. Analyzed test results and concluded that although the theory is valid, the sensitivity of currently available hand-held devices is not fine enough to detect free water in the levels usually present in JP-5 or JP-8. No further investigation of this instrument is warranted.
**2nd QTR**:
Nothing to report.
**3rd QTR:**
Attended the ABCANZ Naval Fuels, Lubricants and Allied Products conference on behalf of Dr. Dennis Hardy. ABCANZ is a five nation (America (US), Britain (UK), Canada, Australia, New Zealand) standing committee that meets as a group every other year. The topics are current and future needs and problems facing the Navy's of the world. Specific discussion topics included two days on Diesel Fuel Marine (DFM) also known as NATO F-76, and some discussion of Aviation Turbine Fuel JP-5. One-day discussion on lubricants including gas turbine oils, diesel oils, and gear oils. One day on hydraulic oils and greases. One day was also spent on refining, production, distribution and global availability on supply.
**4th QTR:**
Nothing to report.
**Customer:** Dr. Dennis Hardy, NRL Washington c/6121, hardy@ccf.nrl.navy.mil, (202) 767-3559
**Reserve Project Team**: […..]
**Plans for Future Support**: Continue to follow-up on conference items.

**Project Title**: TEDS to GCCS-M
**Focus Area:** FNC Information Distribution
**Project Summary:** Authored software to extract merchant ship position reports from the Tactical Environmental Database System (TEDS) and send them to NRL Monterey's local JMCIS terminal, permitting scientists to study the patterns of weather observations and identify inconsistencies in position reports. Also wrote software linked to the JMCIS Application Programming Interface which simulated own ship's movement, permitting others to test and develop "Now Casting" weather software.
**Accomplishments:**
**1st QTR:**
Executed two-day IDTT at NRL Monterey and 1.5 days of incremental drills. During incremental drill periods developed software to simulate the motion of a "dummy" ship and generate periodic position reports in GOLD format. Ship's starting and ending point and speed of progress are user-selectable via a configuration file.
During two-day IDTT at NRL Monterey, ported the software from Mac OS to HP-UX for use on NRL's lab computer. Assisted lab personnel at the NRL visualization lab in establishing a serial data link between two test computers. Used the serial data link to test and debug the software by sending GOLD format contact reports from the computer running the dummy ship software to the computer running JMCIS (GCCS-M). Familiarized lab personnel with aspects of contact database management in JMCIS. Conducted familiarization on the JMCIS application programming interface (API) and developed a version of the ship simulation program that operated as part of the JMCIS package.
**2nd QTR:**
A 12-day AT period on-site at NRL Monterey, as follow-on to preliminary work that was done last quarter using IDTT & incremental drills. All software was written under UNIX in the standard C programming language, with comprehensive documentation. TEDS to GCCS-M software was completed, tested and debugged. The software provides quick visualization of the TEDS surface ship database population, distribution and reporting frequency. It allows scientists to play back GEO-SIT "movies" of surface ship position reports, showing where each surface synoptic observation is taken. This allows comparison of the relative reporting density in various areas of the ocean. GCCS-M automatically compares new position reports to previous reports for the same ship and identifies any inconsistencies as "ambiguities". During a three-day trial run the software was detecting position anomalies in about 2% of the reports. Many seemed to be data entry errors at the ship end (ie north instead of south latitude and missing or transposed digits). There is the potential application of exporting these contact reports from the local JMCIS terminal to a fleet or battlegroup Force Over-the horizon Track Coordinator (FOTC) for inclusion in a fleet or battlegroup common operational picture.
Also wrote a program to simulate own ship's movement (Lat/Lon/Cse/Spd) via the JMCIS API. The movement simulator program provides a feed similar to shipboard GPS systems, continuously updating own ship's position in GCCS-M. This will permit testing of software, which needs to query GCCS-M to obtain a real-time position, such as software proposed for the "Now Casting" weather forecasting program.
**3rd QTR:**
Nothing to report, project complete.
**Customer:** Mr. Larry Phegely, NRL Monterey c/7542, phegley@nrlmry.navy.mil, (831) 656-4752.
**Reserve Project Team**: […..]
**Plans for Future Support**: The TEDS to GCCS-M project is complete. Groundwork for future support of NRL Monterey has been established.

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**Project Title:** Northern Gulf of Mexico Littoral Initiative (NGLI)
**Focus Area:** Scientific Technology Staff c/OTT
**Project Summary:** Assist NGLI project during mission stand-up to develop web page tools.

**Accomplishments**:
**1st QTR:**
Assist in NGLI web site development - used to host project status, products and related projects. Implemented Geology pages to web site, including core samples, pictures, analyses, X-rays. Developed time conversion routine to run under Linux operating system; algorithm accepts generic or standardized zones. Added "user-friendly" options. Added automated features to and completed time zone conversion software. Located and acquired the daily, monthly and yearly statistical data for 20 river gauge stations.
**2nd QTR:**
Acquired, reviewed and modified/fixed stick diagram plots to display ADCP current vectors at selected depths. Added "user-friendly" options. Coordinated technology transfer from NRL DC to NGLI project members the algorithm to calculate a "distance from shoreline" for points over water. Arranged accounts on Supercomputer for testing code. Updated Linux operating system and installed Kerberos security software on developmental system. Modified time zone conversion software to run under Unix operating systems.
**3rd QTR:**
Arranged accounts on Supercomputer for testing code. Continued with the update of the Linux operating system. Began the development of time series plots of ADCP current vectors with linked ship's position display.
**4th QTR:**
Nothing to report.
**Customer:** Naval Oceanographic Office, Scientific Technology Staff c/OTT
**Reserve Project Team**: […..]
**Plans for Future Support**: Will continue to develop web site for the balance of the fiscal year.

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**Project Title:** Future Naval Capabilities (FNC) Littoral ASW (LASW) Assistant Reserve
**Focus Area:** FNC
**Project Summary:** Disseminate program and technical information from the FNC LASW Program to the Naval Reserve Science and Technology Program; assist program office to identify efforts where other Naval Reserve Officers might assist in the accomplishments of specific tasks.
**Accomplishments**:
**3rd QTR:**
LCDR […..] was selected to the FNC LASW project. Initial contact was made with CDR Donald Selvy, LASW Reserve Liaison Officer. Planned to map a strategy with CDR Selvy and contact the program manager for further information and POC's. Identified potential project-related support for annual AT.
**4th QTR:**
Nothing to report.
**Customer:** CDR Donald Selvy
**Reserve Project Team**: […..]
**Plans for Future Support**: Continuing to work on identifying LASW needs.

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**Project Title:** AVHRR Satellite Image Processing
**Focus Area:** NRL
**Project Summary:** Validated satellite sea surface temperature measurement methods and develop training materials for satellite scatterometry.
**Accomplishments**:
**1st QTR**:
Using NRL Monterey's satellite training "Composer" software, six online tutorials were developed for the NRL Monterey Products Training web site. Under the heading of Marine Winds and Waves Validation,

these online tutorials provide a description of satellite scatterometry and radar altimetry data and their use in the forecasting cycle of Naval meteorological and oceanographic products.
48 hours of incremental drills aboard the USCGC Polar Sea (WAGB-11) collecting AVHRR satellite imagery and ancillary meteorological data for validation studies of satellite sea surface temperature algorithm were completed.
**2nd QTR**:
None to report.
**3rd QTR:**
None to report; project complete.
**Customer:** Thomas Lee, NRL Monterey c/7541, lee@nrlmry.navy.mil, (831) 656-4883
**Reserve Project Team**: […..]
**Plans for Future Support**: Project Complete

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**Project Title:** Chesapeake Outflow Plume Experiment 1 (COPE 1)
**Focus Area:** NRL
**Project Summary:** Conduct experiments to examine the Ocean Surface Current Radar tidal data and relationships and publish results.
**Accomplishments**:
**3rd QTR**:
Completed processing of remaining ocean color images of COPE I experiment. Preliminary hypothesis formed from early results on first image not clearly found in subsequent images. Further processing required to examine Ocean Surface Current Radar tidal data and their relationship to NRL's c660 (turbidity) ocean color values. Results were promising enough to examine later COPE II and COPE III datasets.
Funded IDTT orders May 15 – 19, 2001. Applied MATLAB program codes developed from previous IDTT visits. Plotted c660 turbidity values against surface current speeds. Checked tidal cycles from Cape Henry and Virginia Beach. Transferred all data, algorithms, and imagery to University of Miami for further analysis.
**4th QTR:**
Nothing to report.
**Customer:** Dr Bob Arnone, NRL SSC, Code 7333, arnone@nrlssc.navy.mil, 228-688-5268
**Reserve Project Team**: […..]
**Plans for Future Support**: The final phase of this project will be finished using incremental drills and volunteer time at the Rosenstiel School of Marine and Atmospheric Sciences (RSMAS), University of Miami. Expect to publish results in peer-reviewed literature.

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**Project Title:** National Ocean Science Bowl (NOSB)
**Focus Area:** ONRHQ
**Project Summary:** Provide public relations support on behalf of US Navy.
**Accomplishments**:
**3rd QTR**:
Performed as Moderator during ONR sponsored Final NOSB competition during Oceanology 2001 Conference in Miami Beach, April 2nd using no cost IDTT orders. Made positive impression of US Navy Reserve to several competing high school teams from around the nation. Procedures the same as that followed in South Florida Regional NOSB competition. Moderator controls flow of game, presenting questions concerning different aspects of ocean science.
**4th QTR:**
Nothing to report.
**Customer:** Ms Gail Cleere, Public Affairs Office, ONR 00PA, onrpao@onr.navy.mil

**Reserve Project Team**: […..]
**Plans for Future Support**: Volunteer time or incremental/flexible drill will be used for next year's (2002) South Florida Regional National Ocean Science Bowl competition.

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**Project Title:** FNC Autonomous Operations (AO) Reserve Liaison Officer (RLO)
**Focus Area:** FNC
**Project Summary:** Objective is to gain background knowledge on the issues concerning FNC AO and develop projects and strategies that help to accelerate the FNC process.
**Accomplishments**:
**3rd QTR**:
Applied and selected for the FNC AO RLO. Sent via e-mail letters of introduction to each of the ONR program managers who have responsibility for FNC AO projects. Coordinated with the FNC Focus Area Coordinator on identifying future reserve support opportunities. Scheduled initial meetings with ONR program managers for 9-10 July. Arranged to observe and conduct R&D liaison during an AUV student competition at the Naval Academy 11-15 July. Attended South Florida Ocean Measurement Center (SFOMC) organizational meeting involving principals from the Navy and various civilian research institutions. SFOMC will be a major test & evaluation site for AUV operations as well as a Littoral ASW research site. Gained online access to secure ONR FNC web site. Downloaded and read briefing materials on the FNC process and the lengthy (130+ pages) of the DoD's UAV Roadmap. Drafted potential project support descriptions for reservists to attend major autonomous vehicle conferences in San Francisco (17-20 September) and Baltimore (30 July-02 August).
Met with Mr. Mike Deitchman, Ms. Malinda Pagett, and Dr Tom Curtin during a 2-day ADT and 5-day IDTT at ONR. Dr. Curtin recommended me to work with the Naval Oceanographic Office (NAVO) and Commander, Naval Meteorology and Oceanography Command (CNMOC) to get them signed on as a Transition/Acquisition partner to FNC - AO. He does not have the time to dedicate to this effort, so I suggested that it would be a good way for the METOC reserves (Program 20) to interact with Program 38.
An expanded FNC AO deputy program manager meeting took up one afternoon. Gained knowledge on the status of each of the program sub areas, budgets, milestones, objectives, and learned that Program 38 can help out immediately with evaluating proposals. There have been problems with conflict of interest involving previous program managers and participants and there is a big need to find qualified, but independent people to evaluate proposals. Program 38 has a good supply of people with Ph.Ds and significant experience who could do this. Another need is to have a database of what sensors, technologies, and programs are already out there. Program 38 can help here too. There is going to be a combined government agency workshop at NAS Patuxent River the first week of September where each agency will share what they are working on and identify areas where they can combine efforts.
Witnessed teams test their AUVs and make practice runs on the course. Dropped off the Program 38 pamphlets and introduced myself to the other teams who were not there on Wednesday. Discussed AUV systems with each of the participating teams. Met with a NAVO AUV contact and talked about NAVO's role in FNC AO and who I should work with next. Observed the first and final rounds of the AUV competition. The Amador Valley High School team was outstanding and most likely won the first prize (final results were announced in the evening after I was back in Miami). MIT and FAU also had excellent vehicles. The AVHS team had excellent mission software as well as good modular design. Each team has a paper on the web describing their AUV on the AUVSI web site.
**4th QTR:**
Met with FNC AO program and discussed the role of the reserves in supporting FNC AO. Wrote memo describing potential areas for future Program 38 support. These areas include: proposal evaluations, conference attendance, demonstration support, collegiate unmanned vehicle competitions, program structure support, updating a sensor technology database, and assessing technology readiness levels. One specific need identified was for a reservist to work with the Naval Oceanographic Office (NAVO) and Commander, Naval Meteorology and Oceanography Command (CNMOC) to get them sign on as a Transition/Acquisition partner to FNC – AO. A new Program 38 member, CDR Brian S Bourgeois of

ONR S&T HQ 106 has agreed to do this project. Observed the AUV student competition at the Naval Academy 11-15 July. Witnessed teams test their AUVs and make practice runs on the course. Handed out Program 38 pamphlets and talked about careers at ONR and NRL. Discussed AUV systems with each of the participating teams.

**Customers:** Mr Chris Alberg, FNC Process Coordinator ONR 00ST, albergc@onr.navy.mil. Mr Mike Deitchman, FNC AO, deitchmanm@onr.navy.mil. Dr Tom Curtin, AUVs ONR Code 322, curtint@onr.navy.mil. Ms Malinda Pagett, UAVs, padgettm@onr.navy.mil.
**Reserve Project Team**: […..]
**Plans for Future Support**: Continue to work with the Naval Oceanographic Office (NAVO) and Commander, Naval Meteorology and Oceanography Command (CNMOC).

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**Project Title:** Oceanology 2001
**Focus Area:** FNC
**Project Summary:** Gained state-of-the art knowledge on where the leading edge of research is going in the ocean sciences.
**Accomplishments**:
**3rd QTR**:
Attended ONR sponsored oceanography conference including specialized seminars on Autonomous Underwater Vehicles (AUVs) and High Frequency (HF) ocean observing radars (e.g. OSCR). Met with several NRL scientists including Dr Bob Arnone. Conducted R&D liaison with industry, government agencies, and civilian research institutions.
**4th QTR:**
Nothing to report.

**Customer:** Dr Bob Arnone and FNC Coordinator, Mr Chris Alberg.
**Reserve Project Team**: […..] Other Program 38 personnel also in attendance in support of various projects.
**Plans for Future Support**: None

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**Project Title:** Program 20 Liaison, Meteorology and Oceanography (METOC) Reserves
**Focus Area:** Other
**Project Summary:** Liaison between Program 38 and Program 20
**Accomplishments**:
**3rd QTR:**
a) Attended Saturday Drill (19 May 2001) of Program 20 Headquarters unit, NMORA HQ 1066. Provided valuable information on the role of reserve Special Duty METOC officers (1805) within Program 38. Discussed updating the METOC Roster Planning guide to reflect billets an 1805 officer could take within Program 38. Heard briefs on Promotion and Senior Billet Selection Boards and the 1805 community brief used to familiarize the selection board.
b) Coordinated future ADT travel to Puerto Rico. Arranged for pass down information from the staff METOC officer for Commander, Western Hemisphere Group.
c) Visited Naval Atlantic Meteorology and Oceanography Facility Jacksonville for orientation. Package submitted to Naval Air Reserve Jacksonville for senior billet selection board (applying for the Commanding Officer of METOC reserve unit, NMORA 1274).
**4th QTR:**
Prepared and presented detailed daily environmental briefings covering weather and ocean conditions in South and Central America, tropical Atlantic and eastern Pacific, travel weather, and volcanic ash

advisories. Delivered expert actionable recommendations on weather impacts to naval operations in the AOR. Processed air-dropped XBT data and developed sound-speed profiles and sonar ranges during the Pacific phase of UNITAS. Reviewed, updated, and improved COMUSNAVSO Destructive Weather Bill.
**Customer:** LCDR Amilcar Padilla, Reserve Liaison Officer, Code N1, Commander, US Naval Forces Southern Command, padillaa@cusns.navy.mil, DSN 831-5688
**Reserve Project Team:** […..]
**Plans for Future Support**: None anticipated. Open invitation by COMUSNAVSO for further staff METOC support with a 90-day notice

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**Project Title:** Space Robotics Laboratory
**Focus Area:** NRL code 8230
**Project Summary:** Developed several software products for the space robotics rendezvous and docking laboratory.
**Accomplishments**:
**3rd QTR:**
1) Developed software code to ensure the safe operation of an eight-degree of freedom robot to ensure mutual interference between the physical laboratory and a second dynamic payload robot. This "sensitive skin" software prevents physical damage to a $100,000 robot in a highly dynamic laboratory setting.
2) Developed software code to provide the optimum positioning information
for two multi-degree of freedom robots for rendezvous and docking operations.
**4th QTR:**
Nothing to report
**Project Customer:** Nelson Creamer, Controls System Division, NRL Code 8230
**Reserve Project Team:** […..]
**Plans for Future Support**: None

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**Project Title:** Command Planning
**Focus Area:** Other
**Project Summary:** Staffing and Project Review for Det 510 Supporting NRL
**Accomplishments**:
**3rd QTR:**
a) Performed 5 day AT at Naval Research Lab, meeting with the sponsors for the projects our unit members are supporting. Face to face briefings with Dr Hardy (Fuels), Dr Imam (Carbon Nanotubes) and CDR Ahlers (Submarine Psychology in the Littoral). Validated project objectives and member abilities to accomplish tasks.
b) Briefed CAPT Rau on staffing and project status.
**Customer:** CAPT Doug Rau, CO NRL
**Reserve Project Team:** […..]
**Plans for Future Support**: N/A. Complete for FY01.

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**Project Title:** Stability performance of Tertiary Alkyl Primary Amines(TAPA) in diesel fuel.
**Focus Area:** NRL Washington DC
**Project Summary:** Test stability qualities of TAPAs in unstable diesel fuel.
**Accomplishments**:
**4th QTR:**
The project was to test two TAPA's from Rohm & Haas in unstable test diesel fuel by the ASTM D5304 method. ASTM D5304 is the test method required by military specifications. The project was to determine if these additives improved fuel stability as measured by this test. The additives were tested in a

20% #2 Diesel/80% LCO mixture, a highly unstable fuel, and were found to give significant stability improvement as measured by ASTM D5304. Additional work will be required to determine the optimum treat rate in an actual candidate fuel to meet military specifications. If desired this would be the subject of a new project.
**Customer:** Dr. Dennis Hardy, Code 6121, hardy@ccf.nrl.navy.mil, 202-767-3559
**Reserve Project Team:** […..]
**Plans for Future Support** This project was a stand-alone project fully completed during the 5 day ADT. In a larger sense it supports the goal of upgrading commercial diesel fuel to military standards.

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**Project Title:** Watchstanding Fatigue Study
**Accomplishments:**
**4th QTR:**
Completed 15-day AT as one of the Navy Research Psychologists on the Watchstanding Fatigue Study. Her contribution to the study was invaluable. She worked side by side with active duty Research Psychologists in ensuring the study protocol was adhered to. She took the leadership role in performing the quantitative analysis of the Watchstanding Fatigue Study inventory of 600 subjects. In addition, she took the initiative to document the research study via digital images.
**Project Customer:** CAPT Michael Curley, NSMRL, Groton, CT; CDR Stephen Ahlers, ONR Code 341
**Reserve Project Team:** […..]
**Plans for Future Support:** None

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**Project Title:** USCOMNAVCENT, Bahrain
**Accomplishments:**
**4th QTR:**
Reviewed and recommended solutions to support implementation of a web-based travel briefing system for members traveling within the Mid-East AOR. Meeting with staff from N1, N6, Force Protection, Force Medical, and Naval Criminal Investigation Service (NCIS), requirements and current resources were assessed that included manpower, computer hardware and software. New initiative by OPNAV09W, TaskForce Web, was investigated and solutions proposed to implement the travel briefing system as part of TaskForce Web, while also connecting to other web candidate projects within the command. Coordinated with N6 staff to implement automation of the web-based command directory, providing for a more timely update to the online directory..
**Project Customer:** USCOMNAVCENT, Bahrain
**Reserve Project Team:** […..]
**Plans for Future Support:** None

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**Project Title:** NAVSUPPSHIP, Pasgagoula, MS
**Accomplishments:**
**4th QTR:**
Provided consultation and web design support to NAVSUPPSHIP, Pasgagoula, MS for their website.
**Project Customer:** NAVSUPPSHIP, Pasgagoula, MS
**Reserve Project Team:** […..]
**Plans for Future Support:** None

**Project Title:** Space Sciences Division
**Accomplishments:**
**4th QTR:**
Assisted in coordinating the the FY02 Navy Space Experiments Review Board (SERB) in preparation for duty as the Navy Liaison to the DoD Space Test Program office at NASA Johnson Space Center in Houston, Texas.
**Project Customer:** NRL Code 7600
**Reserve Project Team:** […..]
**Plans for Future Support:** None

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**Project Title:** Materials Science and Technology Division
**Accomplishments:**
**4th QTR:**
Prepared slurries of phthalonitrile resin and one weight percent single wall carbon nanotubes (laser and HiPCO material).
Characterized nanotube starting material using transmission electron microscopy.
**Project Customer:** NRL Code 6300
**Reserve Project Team:** […..]
**Plans for Future Support:** None